

he says: "The contents are so perfectly colorless that they are quite imperceptible in water, unless it be charged with suspended matter, and then only show their presence by displacing this matter from the space which they occupy themselves."

THE WRITER READ recently an article, written by some enthusiastic convert, which was considered to contain some startling proofs of the doctrine of evolution. It is not worth mentioning, except that it represents a class of dabblers in science who, through gross ignorance, misinterpret discoveries and spring their startling deductions upon a gullable public. As it is this class that courts the daily press, and especially infests the weekly, the public mind is generally in an abused condition. The "mycologist" referred to had evidently read Dr. Cooke's little book on fungi, and at once became an ardent theorizer. He now claims that he can prove evolution off hand, for his reading of fungi literature assures him that it is a common thing for one genus to turn into another, and even for neighboring families to lose their identity in each other. *Uredo*, *Æcidium*, *et al.*, are to him genera, whose partition walls can be broken down only to prove the doctrine of evolution. To all this an agriculturist remarks: "If these things are so, can we stand out longer against the 'wheat and cheat' idea?" With such enthusiastic expounders, mycology, evolution and agriculture ought all to flourish, and the public mind be kept in a feverish state of excitement.

IN THIS DAY of hasty publication of new species, when every collector feels competent for this difficult work, it is refreshing to read in the *Naturalist* some suggestions by Prof. Bessey in regard to the publication of new species. There is no doubt that the right to describe stimulates the study of Systematic Botany, but such stimulation too often results in utter confusion. As cautious as the editors of this journal have been in this respect, and they are conscious of having frequently given offense to contributors, they have published species that had no right to stand, and they are perfectly willing to adopt either of the following suggestions of Prof. Bessey:

1. Every description to be accompanied by the statement that type specimens were deposited in this or that established herbarium.
2. Every description to be accompanied by specimens to be distributed by the editor of the journal giving such publication.

The third suggestion, that specimens should be deposited in the National Herbarium, is too restricted when we consider the present relative importance of our herbaria. We consider the first suggestion as the most feasible, and the second as most complete, but impracticable.

CURRENT LITERATURE.

Notes on the Cryptogamic Flora of the White Mountains. By W. G. Farlow. Extr. from *Appalachia*, vol. III., part 3, Jan. 1884, pp. 232-251.

This is an important contribution to the flora of a district of which the flowering plants have been well known for many years, but the algæ and fungi of which have been almost totally neglected. As a contribution to a knowledge

of the distribution of some of the thallophytes, especially as affected by altitude, it is also interesting. In general it may be said that the thallophytic flora turns out to be similar to that of the Adirondacks and to the alpine and arctic flora of Europe. Twenty-three algæ are enumerated, and about one hundred and ten fungi, part of the latter, however, being the so-called imperfect or secondary forms. The following new species are described: *Propolis circularis*, *Sticta Tsugæ*, *Cylindrosporium Gei*, *Cercospora Pyri*, *Ramularia Oxalidis*. The primary object in visiting the region was to study the occurrence and distribution of the *Peridermia*. Three species were found. The first, *P. abietinum* (*P. decolorans* Pk.), on dwarf *Abies nigra*, is alpine. There are two forms known in Europe, one of which is supposed to be the æcidial stage of *Chrysomyxa Rhododendri*. This is the one collected, and although the *Chrysomyxa* could not be found, its supposed host affected the same situations as those of the *Peridermium*. The second, *P. balsameum*, on *Abies balsamea*, is sub-alpine. It differs but slightly from *P. columnare*, the European form associated as its æcidial stage with *Calypsotheca Gæppertiana*. Its distribution, both in the White Mountains and in other parts of the country proves to be the same as of the *Calypsotheca*, and so far as that goes, indicates that they are stages of the same species. The third *Peridermium*, *P. Peckii*, found at the base of the mountains, could not be connected with any teleutosporic form.

Botanical Micro-Chemistry, an Introduction to the Study of Vegetable Histology, by V. A. Poulsen. Translated with the assistance of the author and considerably enlarged, by William Trelease. Pp. 109. Cassino.

In the GAZETTE for August, 1883, Carl Müller's translation of this book was reviewed, and the hope expressed that we might have an English translation. That wish was hardly expressed before we learned that Prof. Trelease was undertaking the work, and in the neat volume before us we have the result. It is not necessary to repeat here the commendations of the previous review, but simply to give notice that the book is in the market, and is in every way one suited for the laboratory student. Some might prefer a different binding and thinner paper for a laboratory guide, but it is hard to make a publisher do less than his best, and this surely is an improvement on the style of Penhallow's *Vegetable Histology*. No one was better fitted for this translation than Prof. Trelease, and his thorough acquaintance with every detail of laboratory work make his additional notes (always signed with his own initials) not the least valuable part. A complete index adds to one's comfort, and we bespeak for this little book the careful attention of all students of Vegetable Histology.

The True Grape Vines of the U. S. and the Diseases of the Grape Vines. By Dr. Geo. Engelmann. Reprinted from the Bushberg Catalogue, pp. 9-20.

The Grape Manual, from which this paper is reprinted, is a most satisfactory affair, and is really very different from the ordinary horticultural catalogue. Dr. Englemann's paper is but a sample of the thorough and scientific way in which every subject relating to grape vines is treated. In the reprint before us the subject is treated in Dr. Engelmann's usual complete way. A full account of our species of *Vitis* is given, with a key to their arrangement, and, what is of very great value to botanists, a table of grape seeds is given, by the help of which it would seem that any one could name the typical forms of grapes. The systematic arrangement of N. Am. grape vines is as follows: I. True grape vines, with loose, shreddy bark and forked tendrils, and II. Muscadine grapes, with firmly adhering bark and simple tendrils. The second division contains only *V. vulpina*, L. (*V. rotundifolia*, Mx.) The first division is subdivided into two groups: A, those with more or less continuous tendrils, including only *V. Labrusca*, and, B, those with intermittent tendrils. Group B is

subdivided into two sections based upon the pubescence or not of the leaves. In the pubescent or floccose section we have seed characters used for subdivisions, *V. candicans*, *V. Caribæa*, *V. Californica*, *V. monticola*, and *V. Arizonica*, having the raphe on the seed indistinct, and *V. æstivalis* and *V. cinerea* having the raphe very conspicuous. The glabrous-leaved section is also subdivided on the same seed character, *V. cordifolia* having the raphe conspicuous, and *V. palmata*, *V. riparia* and *V. rupestris* having the raphe indistinct.

The Elements of Botany: Embracing Organography, Histology, Vegetable Physiology, Systematic Botany and Economic Botany. Arranged for school use or independent study. Together with a complete glossary of botanical terms. By W. A. Kellerman, Ph. D., Professor of Botany and Zoology in the Kansas State Agricultural College, etc. 12mo. pp. x, 348. Philadelphia: John E. Potter & Co., 1883.

A reading of the announcement of this book awakened the hope that in it we might find something better arranged and proportioned than others on the same subject, but a perusal of the work is sadly disappointing. The preceding extract from the title page shows that Professor Kellerman has undertaken to compress a great deal of information into three hundred and fifty pages, and he has done this, unfortunately, at the expense of clearness and accuracy. In an endeavor to prepare a book whose brevity would suit it for use as a high school text-book on botany, the author has made a too common mistake by trying to tell too much in too small a space. In this, as in most of the school text-books on the biological sciences, the distinction between *education* and *learning* seems to be lost sight of. It seems to be the chief aim of their authors to put a vast mass of facts and definitions at the disposal of the student. After serving the immediate purpose of enabling him to pass the required examination, the book and its contents pass out of sight and out of mind. Whether or not such books are at all disciplinary depends on the teacher; if they are made so, it is *in spite of* their method, and not because of it.

In the particular volume under consideration, the proportion of one part to another is, in our opinion, extremely bad. Organography occupies 61 pp., Histology and Physiology 45, while Systematic and Economic Botany have 216. No wonder students "don't like botany" when they are fed on such dry husks. The amount of space to be devoted to any particular part of the subject may, however, be considered a matter of opinion, and we might easily forgive a mistaken judgment in this respect. Errors of fact and bungling statements and definitions are less easily overlooked, and this work abounds in both. One need go no further than the first page of text (p. 15) to find three examples of such. Only three organs, root, stem and leaves, are enumerated as visible, when "any common plant, such as a Grass, Rose-bush, Willow or an Oak" is examined. Why not trichomes? What would a pupil infer should he, by chance, actually examine a grass like *Panicum capillare* or any rose as to the relations of the hairs and prickles? A little further down we find "Hairs, or Trichomes. * * * * They are mostly *hair like*."¹ In stating the differences between stems and roots it is said that "roots never produce buds" (p. 23), whereas every gardener knows how abundantly adventitious buds occur on the blackberry and other plants. On p. 26 we read this in regard to bulb-scales: "This nourishment is consumed in such bulbous plants as the Hyacinth, etc., by the production of flowers *in advance of the leaves*." What *Dioncæa* leaves would do with a *third lobe* which they are said to possess (p. 27) is hard to conceive. Although claiming to reduce the number of technical terms, the author introduces such needless ones as *fibrillæ* for root-hairs (p. 16), *rachis* for the common leaf-stalk of a com-

¹ Italics ours.—ED.

pound leaf (p. 35), and the almost obsolete series, *monogynous*, *digynous*, etc. The attempt at extreme brevity results in inadequate explanations; e. g., "The leaves of *Iris* are equitant, that is, straddling over each other" (p. 37). No pupil of any age, unless familiar with the arrangement of the bases of the leaves of *Iris*, would get the slightest idea of what is meant by equitant leaves. Under stipules (p. 37), the student is told, "in *Galium* they are interpetiolar and as large as the leaves and exactly resemble them, so that the leaves are said to be *whorled*; but in reality they are opposite, the two intermediate leaves on each side being free stipules." If true of the 4 and 8-leaved *Galiums*, it is a very unnecessary fact for the student, and it is especially out of place in an "organography," which almost ignores homology. The unrestricted definition of a pistil as consisting of three parts, ovary, style, and stigma, is followed two pages later (p. 53) by the words concerning the pine cone: "The scale is, therefore, the pistil." Nor does the antecedent premise of the "therefore" explain the apparent contradiction. Would not the two ideas of a pistil be slightly confusing to a novice? On p. 64 is the following astounding definition: "When the flowers are evidently arranged to favor self-fertilization and prevent cross-fertilization, they are said to be cleistogamous." Nor are the following from pp. 92 and 95 very much better: "Certain other cells, or rows of cells, become modified into tubes or ducts, and form the string-like masses, or form fibers in the stems of the higher plants. These are the fibro-vascular bundles." "The fibro-vascular bundles are composed of tracheary tissue, sieve-tubes and parenchyma."

The illustrations of the book are "copious"—too copious, such as they are. The majority are photo-engravings from the author's original drawings, some from nature (we suppose), some copied from various sources and some from Vick's catalogue. In some cases the source of the copied illustration is acknowledged; in many cases, particularly when slightly altered, it is not. In few instances is the name of the plant, from which the illustration is taken, given. Aside from their complete lack of artistic finish, some of the drawings contain glaring errors. Fig. 21 shows accessory buds for adventitious ones. The leaves of *Dionæa* seem, in fig. 25, to be distinctly cauline. Fig. 90, the diagram of an umbel, shows a *pyramidal* cluster; nor is there anything in the text to correct the impression. Fig. 91, the diagram of a spike, shows the flowers *widely separated*, and fig. 95, of the cyme, is *globular*. Fig. 96 shows a flower of one of the *Malvaceæ* (not named) as the typical flower; at least it is the one to which reference is made when first describing flower parts. Fig. 182, of *Navicula viridis*, has the striations projecting one-third of their length beyond the edge of the valve. Fig. 202, of the stomata and intercellular spaces of the leaf of Pine, is beyond description. Fig. 212, a section of a stoma of the potato leaf, shows the guard cells with walls as thick as sclerenchyma, and so on. Only the most glaring errors have been mentioned, and those named are confined to the first hundred pages.

As lesser blemishes may be mentioned the faulty etymology of some of the terms and the inconsistent method in the expression of the Greek words in English letters—as an example of the latter notice "*hypogynous* (Gr. *hypo*, under; *guna*, pistil)." p. 48. The adoption of the English system of measures and temperatures is made on the plea of unfamiliarity with the metric. When and how shall pupils become familiar with the metric system if they are not forced to see and use it?

Finally, the entire omission of an index adds an inconvenience to the use of a book already unfit for use because of its many mistakes; and as a general statement it will probably hold good that Dr. Gray and Prof. Bessey would prefer to do their own abridging.